Frequently Asked Questions: Natural Gas

Where does our natural gas come from?

Washington relies on imported gas from two nearby gas producing regions: the Western Canadian Sedimentary Basin (WCSB) which is located primarily in the Canadian provinces of Alberta and British Columbia, and the Rocky Mountain gas basins, located primarily in Wyoming, Utah and Colorado. Historically, more than two-thirds of our natural gas comes from Canada with the rest from the Rockies, but this mix can vary depending on the price of Canadian and domestic natural gas.

How is natural gas delivered to Washington State?

Two major natural gas pipelines serve the Pacific Northwest. (Figure 1) The Northwest Pipeline, owned and operated by the Williams Company, was constructed in the late 1950s and reaches most urban locations in the state. It connects the Pacific Northwest to the natural gas fields in the Rocky Mountains region and in Canada. The Pacific Gas & Electric Gas Transmission Northwest (PG&E GTN) pipeline (frequently referred to as "PGT," after the previous name, "Pacific Gas Transmission") went into service in 1961 primarily to connect California to natural gas supplies in Alberta, Canada, but also serves as an important source of supply for the Pacific Northwest.

How is natural gas distributed to consumers?

Within local communities, gas is distributed by four investor-owned utilities (Puget Sound Energy, Avista, Cascade Natural Gas and Northwest Natural Gas), sometimes called local distribution companies (LDCs), and three small city-owned utilities (Ellensburg, Enumclaw and Buckley). The utilities purchase gas at market hubs[1], and transport the gas through the interstate pipeline system to the "city gate" where it enters the local distribution system. The Washington Utilities and Transportation Commission regulates local distribution company gas retail rates. Service territories of the four major LDCs within Washington State are depicted in Figure 2. Many large customers arrange for their own gas supplies from market hubs and purchase transportation services from interstate pipelines and/or LDCs.

In addition to flowing gas from pipelines, Washington State's gas utilities rely on underground storage fields to meet peak demands. Locating major storage facilities close

[1] Natural gas market hubs evolved from Federal Energy Regulatory Commission (FERC) gas industry restructuring orders in 1992. These market centers provide new gas shippers with many of the physical capabilities and administrative support services formerly handled by interstate pipeline companies "bundled" sales and services. Centers exist where two or more pipelines interconnect. The Sumas Center in British Columbia is the principal source for trading and transportation of natural gas in the Pacific Northwest. Other centers relevant to the region are at Kingsgate, Idaho; Malin and Stanfield, Oregon and the Opal Hub in Wyoming.

to end-use customers allows storage to substitute for pipeline capacity to meet peak demand. The largest is Jackson Prairie near Chehalis, Washington, along with the Mist, Oregon storage facility and Clay Basin in Northeast Utah. These facilities are primarily used for seasonal storage to increase peak day deliverability. Gas is injected during off-peak periods and retrieved during the peak winter heating season.

Are there adequate supplies of natural gas to meet future needs?

U.S. natural gas production has not kept pace with U.S. demand growth over the last 10 years. Despite record high natural gas prices and drilling activity, U.S. and Canadian natural gas production has remained flat for several years as new sources become less productive and more difficult to develop. Recent reports by the Energy Information Administration (EIA) and National Petroleum Council have scaled back earlier forecasts of U.S. and Canadian production levels. Production growth is forecast for the Rocky Mountain gas basins and Alaska (depending on pipeline construction) contributing to an overall increase in U.S. production of 10 percent by 2025. Imports from Canada are expected to decline 20 percent. During the same period, U.S. demand for natural gas is forecast to increase by almost 40 percent. To make up the shortfall, EIA predicts imports of liquefied natural gas (LNG) will increase from 2 percent to over 20 percent of U.S. natural gas consumption. Since the Northwest is part of a national market for natural gas, future supplies will reflect these national trends.

Who consumes natural gas in Washington?

Electricity generation accounts for a quarter of Washington's natural gas use. The consumption shares by the residential, industrial, and commercial sectors in 2004 are 28%, 27%, and 20% respectively. Residential and commercial consumption has been relatively stable with growth in the 1990s due to population and economic growth as well as an increasing preference for natural gas for space and water heating. Industrial natural gas consumption tends to be more volatile and price sensitive than the residential and commercial sectors.

How do recent natural gas prices compare to historical prices?

After peaking in the early 1980s, inflation adjusted retail natural gas prices declined significantly by 1990, nearing the price levels of the mid-1970s. Prices were relatively stable during most of the 1990s. Residential prices were highest and were almost twice as much as industrial rates for much of this period, largely due to the higher cost of delivering gas to smaller customers. Natural gas prices for utilities tended to be more volatile because consumption was primarily for natural gas-fired power plants used for meeting peak power demand.

Beginning in 1999/2000 prices began to rise due to increased demand and constrained natural gas supply. Market prices for natural gas in Washington State grew 71, 82, and 178 percent for residential, commercial, and industrial users respectively from1998 to 2004. Adjusting for inflation, prices in 2004 were still less than peak prices in the early

1980s, but by mid-2005 residential and industrial prices were higher than the peak 1980s prices and commercial prices were similar.

Why are natural gas prices increasing?

Higher natural gas prices are due to growing demand for natural gas. Recent price forecasts indicate a continued tight supply-demand balance for natural gas and high prices. This can lead to natural gas price spikes and volatility from situations that increase demand or reduce supply. For example, severe seasonal weather (cold winter, hot summer) can drive up demand for natural gas for heating or for power generation for electric air conditioning. In the West, drought conditions and low river flows can reduce hydroelectric generation capacity increasing the need for natural gas-fired generation (as occurred in 2001). The damage to natural gas infrastructure from the recent Gulf Coast hurricanes illustrates the impact of supply disruptions on prices.

High natural gas prices can also reduce demand from consumers that are price sensitive (particularly large industrial users), encourage energy efficiency and conservation, and lead to investments in supply options that were not otherwise economical. This can help to dampen price increases and volatility.

How do natural gas prices in Washington compare to other parts of the country?

Prior to natural gas industry restructuring in 1985, natural gas prices in Washington tended to be higher than other parts of the country because the state relied heavily on unregulated Canadian natural gas, but since then Washington prices have been a little below average. Since 1999 Washington's relative ranking for natural gas prices has improved slightly for the commercial and residential sectors. Washington's industrial natural gas prices were among the lowest in 1999, but by 2003 had slipped closer to the U.S. average. The completion of the Alliance pipeline from producing fields in Alberta and British Columbia to Chicago in 2000 along with the expansion of pipeline networks from the Rocky Mountain producing fields to East Coast markets means prices in the Northwest will reflect national trends.

Table 1. Washington State Ranking

Natural Gas Prices

Sector	1999	2001	2003
Residential	*34*	*33*	*38*
Commercial	*32*	*22*	*36*
Industrial	*44*	*42*	*33*

Rank scale: 50 = lowest, 1 = highest, Source: EIA.

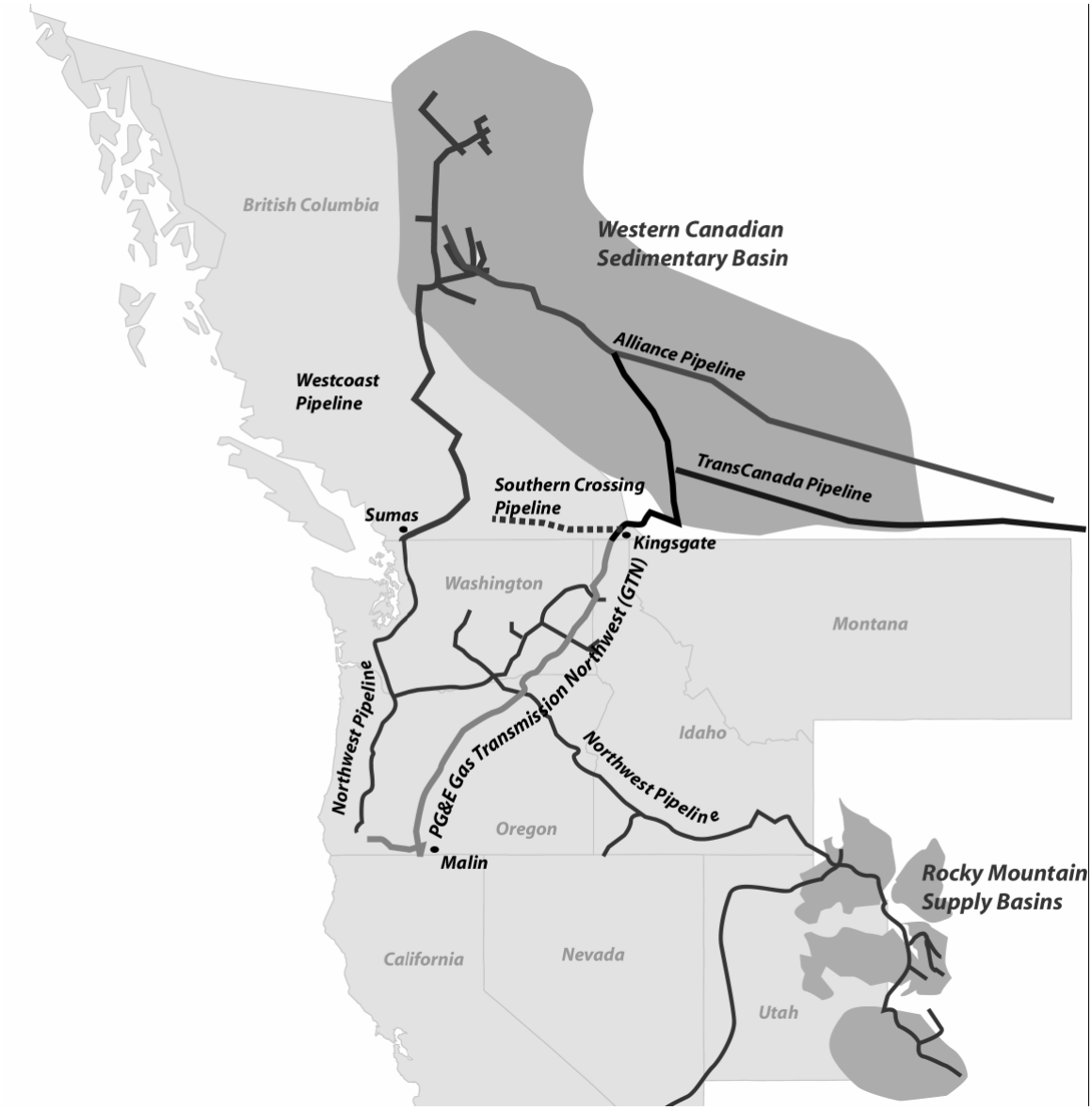

Figure 1. Major Natural Gas Pipelines Serving the Northwest

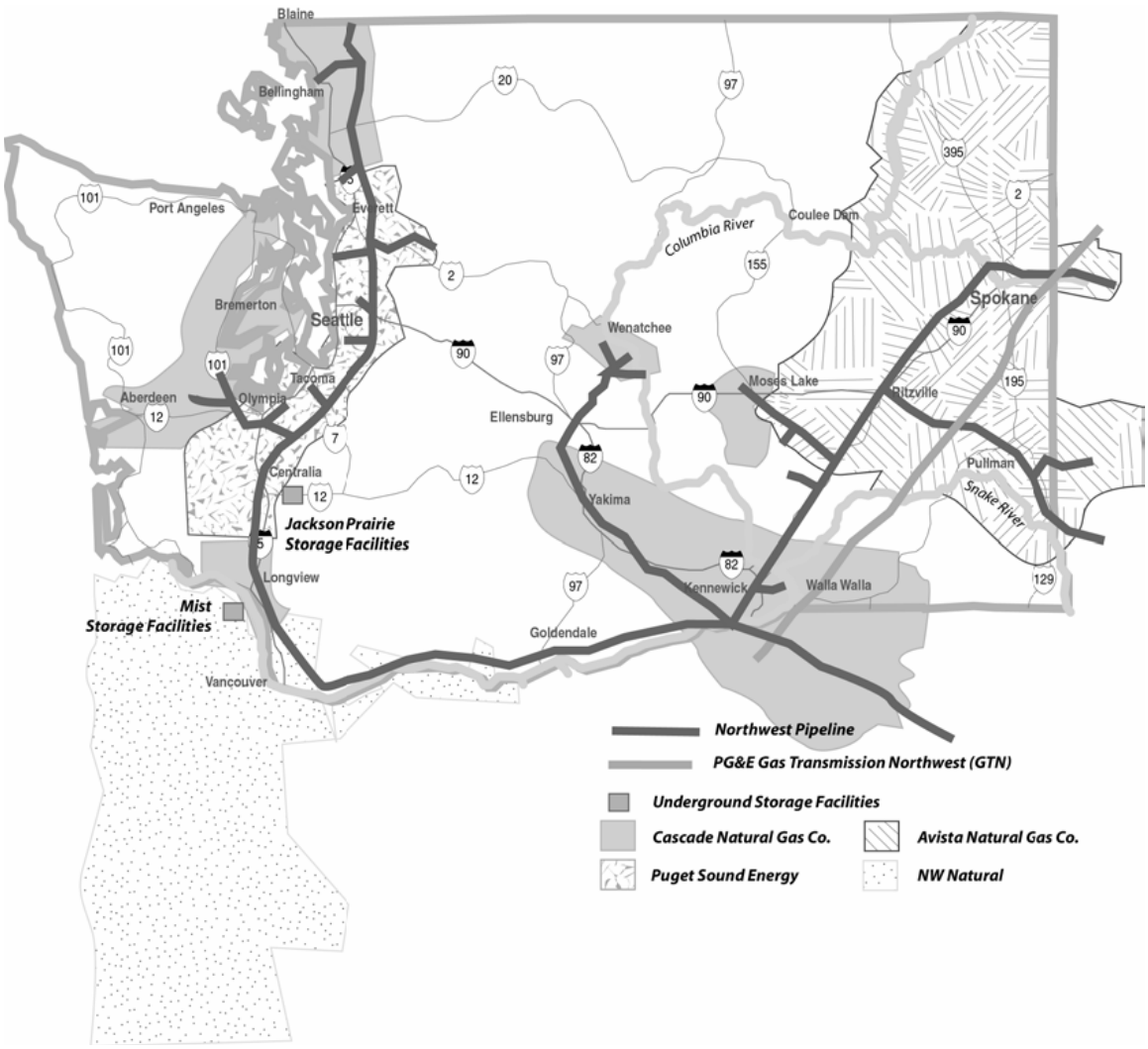

Figure 2. Natural Gas Utility Service Areas in Washington State